Level of service provided by DSNs to inpatients with diabetes: is it enough?

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ARTICLE POINTS

1 Diabetes specialist nurses often express concern regarding the level of service provided to inpatients.

2 Establishing potential inpatient workload is an essential prerequisite to developing services appropriately within the acute unit.

3 A regional audit determined the level of services provided by DSNs to their respective acute units.

4 A simultaneous audit of inpatients within the authors' hospital suggests that patients deemed to require DSN intervention are not necessarily being admitted.

5 The time currently given to inpatient care (10%) in the authors' hospital appears appropriate and is similar to that given by colleagues across the region.

KEY WORDS

- Diabetic inpatients
- Service provision
- Audit of DSN input

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Introduction

Concern among diabetes specialist nurses (DSNs) regarding the level of service provided to diabetic patients admitted to the acute unit prompted the authors to investigate the provision of such services within the Wessex region. This article reports the combined results of an inpatient audit within the authors' hospital and an audit of all diabetes nurses in this region. These suggest that, in the Wessex region at least, DSNs are spending sufficient time on the wards and providing the appropriate services. Recommendations to ensure that referrals to the diabetes nursing services are appropriate are presented.

There is a general concern among diabetes specialist nurses (DSNs) regarding the level of service provided to patients with diabetes admitted to the acute unit. Since the development of services to the wards has resource implications, it is essential first to establish the potential inpatient workload and the level of services being provided in any particular region.

This article reports two audits undertaken in the Wessex region to determine:

1. The services provided to inpatients by DSNs within the region
2. The number of inpatients with diabetes in the authors' hospital who may require DSN intervention.

The results are presented simultaneously.

Methodology

Data on all inpatients with diabetes were collected according to the protocol shown in *Table 1* and a proforma on one day per month for four consecutive months between 1 January and 30 April 1997. During the same period a questionnaire (*Figure 1*) was circulated to all DSNs (n = 38) within the Wessex region.

Results

Data were collected on 138 inpatients (age range 21–93 years; mean 71 years). Of these, 52% were over 75 years of age; the high proportion of elderly inpatients reflects local demographic trends in that 13% of patients served by the Royal West Sussex Trust are aged 75 years or more.

Of the 138 patients, 77% were non insulin dependent, 11% were non insulin dependent on insulin, and 12% were insulin dependent.

The mean bed occupancy by patients with diabetes was 9.1%. This is a significant percentage and represents the potential daily inpatient workload for the DSNs. In the authors' hospital, this translated to an average of 34 diabetic inpatients at any one time.

The response rate to the DSN questionnaire was 100%. The responses indicated that 24 nurses (63%) spent between 1 and 5 hours per week on the wards. Three nurses (8.0%) spent more than 16 hours per week on the wards, but these were specifically employed for inpatient care.

The Wessex DSNs were asked to identify categories of patients whom they would wish to see during an inpatient episode. Their responses are shown in *Table 2*.

The majority of admissions in the inpatient audit were emergencies (83%) which were predominantly due to acute medical conditions. This finding is similar to that of Child et al (1991). In addition, five patients were newly diagnosed with diabetes, although this was not the primary reason for admission. Only two admissions were related to diabetes control: one had diabetic ketoacidosis secondary to a urinary tract infection and the other had 'poor diabetic control' secondary to an asthma attack.

These findings indicate that patients falling within the categories deemed as requiring DSN involvement are not necessarily

being admitted. The decreasing number of admissions related to diabetes control could be seen as a reflection of the rise in number of DSN posts, as suggested by Harrower et al (1993) and Williams et al (1994).

With the drive towards teaching blood glucose monitoring (BGM) to facilitate the achievement of good control, it was surmised that patients who were monitoring their blood glucose before admission would have a higher incidence of good control (Tables 3 and 4). The results show that 64% had good control before admission. Of these, 43% were performing BGM. However, the 3% who were performing urine testing and the 17% who were not monitoring at all still achieved good control.

There was no significant difference between the glycated haemoglobin (HbA_{1c}) obtained from laboratory records before admission and the HBA_{1c} performed on the day of audit (mean = 7.4% for both). The levels of diabetic control between those patients known to the diabetes centre (DSNs) and those who were not (*Table 5*) were compared.

There was no difference in the number of patients with HbA_{1c} in the good control range (HbA_{1c} 3.2-7.9%) (38 in each group). However, the number of patients in the poor control range (HbA_{1c} >8.0%) known to the diabetes centre was higher. This is assumed to be due to the increased referral of patients with poor control to the diabetes nursing service for intervention.

HbA_{1c} determined on the day of audit (*Table 5*) demonstrated that 58% of inpatients had good control (and therefore did not require DSN intervention).

Nineteen per cent of the Wessex DSNs said they would wish to see patients following a change in diabetes treatment, while a further 17% specified they would do so only if conversion to insulin had taken place during the inpatient stay. This may be appropriate as the inpatient audit showed that 61% of patients required no alteration to their preadmission treatment.

The inpatient audit undertaken in the authors' Trust demonstrated that *no* patients were converted to insulin during their admission. However, during the same 4-month period, 16 outpatients were converted to insulin via the diabetes centre.

Table 1. Inpatient audit protocol

OBJECTIVE	
To identify	● Number of inpatients with diabetes ● Level of control ● Number of patients known to the diabetes centre ● Follow-up requirements
Criteria	● Type of admission ● Date of admission and discharge ● Type of diabetes ● Preadmission treatment ● Current treatment ● Type of self-monitoring ● HbA_{1c} ● Diagnosed complications ● Prime site for diabetes care ● Whether patient is known to diabetes centre and diabetes clinic ● Whether patient is referred to diabetes centre during admission
Methodology	● Diabetes centre to identify patients ● Collection of data by diabetes centre one day a month over four consecutive months ● Design of data collection form by clinical audit ● Analysis feedback of results ● Audit report

Name.....

1. Do you see patients (i.e. during hospital admission)? If not, why not?	Yes/no
2. Do you recommend inpatients are referred to you? If yes, who? (please tick) If selected patients only, what type of patient? (please describe)	Yes/no All inpatients Selected
3. How do ward staff refer to you? (please tick)	Telephone Forms
4. Is it your intention to see patients post discharge? If yes, who? (please tick) If selected patients only, what type of patient? (please describe)	Yes/no All patients Selected
5. Please can you estimate the number of hours per week spent on the wards:	1–5 6–10 11–15 16–20 20+
6. Do you think you could improve your service to the ward? If yes, how? If no, what prevents you from doing so?	Yes/no

Comments.....

Figure 1. Wessex diabetes nurses' questionnaire.

PAGE POINTS

1 Just under four-fifths of diabetic inpatients demonstrated good control as measured by HbA_{1c} level.

2 Just over four-fifths of inpatients did not require changes in treatment.

3 One-third of diabetic inpatients were not referred.

4 The current level of non-referral was therefore considered appropriate.

5 The majority of Wessex nurses thought they could improve the service provided to inpatients.

Table 2. Categories of patients whom DSNs would wish to see during an inpatient episode

% Diabetes specialist nurses	Category of patient (multiple responses)
36%	Newly diagnosed type 1/type 2
22%	Poorly controlled
22%	Conversion to insulin
17%	Hypoglycaemic
5.5%	Diabetic ketoacidosis
22%	Other (i.e. educational needs)

Table 3. Means of self-monitoring identified on the inpatient audit

Self-monitoring method	Number of patients	%
Blood glucose monitoring	96	70
Urine testing	7	5
No monitoring performed	35 (including 5 newly diagnosed)	25
Total	138	100

Table 4. Comparison of preadmission HbA_{1c} and type of monitoring

HbA_{1c} level	Blood glucose monitoring	Urine testing	Neither
<8.0% (good control)	60 (62.5%)	4 (57%)	24 (68%)
>8.0% (poor control)	36 (37.5%)	3 (43%)	6 (17%)
No previous HbA_{1c} due to new diagnosis	–	–	5 (15%)
Total	96 (100%)	7 (100%)	35 (100%)

Thirty-one of the 138 patients (22%) were commenced on either subcutaneous or intravenous insulin at some stage during their admission and were subsequently returned to their preadmission medication. Only 8% of inpatients were newly commenced on oral hypoglycaemic agents and only 12% had minor alterations to their preadmission treatment.

This correlates well with the proportion of patients with good control (58%). There was no significant difference between the number of patients admitted who were known to the diabetes centre (71; 51%) and those who were not (67; 49%).

Sixty-three per cent of patients were referred to the DSN according to established referral criteria (*Figure 2*). The development of the referral proforma has increased the referral rate; however, the design allows the DSN to prioritise those patients who need to be seen. Intervention by the DSN would have taken place if appropriate.

Thirty-seven per cent of inpatients were not referred. This would appear appropriate as 58% had good control and 61% of patients had no changes in their treatment, indicating that intervention by the DSN may not have been necessary.

The majority of Wessex DSNs (83%) thought they could improve the service provided to the wards: 36% related it to an improved referral system, 33% to the need for more time but without specifying how they would utilise it, and 25% to the need for increasing staff education (multiple responses were received).

Conclusion

The main purpose of the audits was to identify potential inpatient workload and assess whether redistribution of DSN resources was required.

The time given to inpatient care by the authors is similar to that given by the majority (66%) of the Wessex DSNs. However, it is acknowledged that this may not be the case nationally. Similar audits would need to be performed in each region.

The authors have already spent much

Table 5. Levels of diabetic control recorded preadmission and on the day of the audit

Level of control	HbA_{1c} (%)	Preadmission level (obtained from laboratory records)		Level on day of audit (by HbA_{1c})	
		Known to diabetes centre	Not known to diabetes centre	Known to diabetes centre	Not known to diabetes centre
	<3.2	0	0	2	1
Good	3.2–6.3	19	25	18	22
Acceptable	>6.3–<8.0	19	13	16	10
Poor	8.0+	30	16	27	23

time improving the referral system in place at the Royal West Sussex Trust. This involved designing, in conjunction with ward staff, a referral form which was piloted in a number of areas. The design ensures that patient knowledge regarding diabetes control and self-management skills are assessed at ward level. The assessment areas covered are felt to be within the capability of all trained nurses.

In the authors' Trust, it is recommended that all inpatients with diabetes are referred to the diabetes nursing services. Patients are then seen by the DSN if necessary, either before or after discharge. Recommending the referral of all inpatients encourages nurses working in the acute unit to perform an assessment of the patient with diabetes. As the inpatient audit demonstrated, 67% of patients are being referred according to the authors' policy.

The inpatient audit demonstrated that a large percentage of patients are well controlled and have no changes made to their treatment during an admission. The decreasing trend for patients admitted with diabetes-related problems, such as diabetic ketoacidosis and poor control, probably reflects the outpatient DSNs' work. The percentage of time currently spent by DSNs on the wards would therefore appear to be appropriate.

To ensure that referrals are appropriate (and timely) it is recommended that DSNs:

- Establish a referral policy/protocol
- Design a referral system that encourages trained nurses to acknowledge their role in caring for diabetic patients in the acute unit.
- Evaluate the effectiveness of the above recommendations by audit.
- Provide ward-based resources so that if deficiencies in patient knowledge and self-caring skills are identified, these may be addressed by the ward nurse performing the assessment. ■

REFERRAL TO DIABETES SPECIALIST NURSE

- **Refer all patients**
- **Use resource pack, particularly if patient is newly diagnosed**
- **Every inpatient stay is an educational opportunity**
- **Ensure patient's referral to dietitian**

Consultant.....Ward.....Date of admission.....
Type of diabetes Type 1.....Type 2.....Newly diagnosed.....Established diabetes
Reason for admission.....
Current diabetes treatment.....

1. Do they appear to understand what diabetes is? Yes/no
2. Has the patient seen a dietitian within 12 months? Yes/no
3. Is the patient: urine testing ❒ ; blood glucose monitoring ❒ ; neither ❒
   Are they having any problems? Yes/no
   Please explain.....
4. Who gives injections? Self/other
   Are they having any problems? Yes/no
   Please explain.....
5. Do they take their tablets as prescribed? Yes/no
   Do they think they have any side-effects? Yes/no
   Please explain.....
6. Are they having any problems with: High blood sugars
   Low blood sugars
   Usual range of blood sugars at home? Yes/no

Discharge date.....Length of stay.....
Is patient known to district nurse services? Yes/no
Will they be referred on discharge? Yes/no

Signed.....Named nurse.....

Figure 2. Proforma for referring inpatients to the diabetes specialist nurse.

Child DF, Lewis F, Jones J, Jones H (1991) An audit of diabetic inpatient care. *Practical Diabetes International* **8**(5): 171–2

Harrower AD (1993) Prevalence of diabetic patients in hospital: changing trends over a 10-year period. *Practical Diabetes International* **10**(3): 116–17

Williams DRE, Anthony P, Young RJ, Tomlinson S (1994) Interpreting hospital admission data across the Korner Divide: the example of diabetes in the North Western Region. *Diabetic Medicine* **11**(2): 166–9